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Radio Access Technology (RAT) Selection Mechanism using TOPSIS Method in Heterogeneous Wireless Networks (HWN) (Article) Open Access

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Abstract

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In next-generation wireless networks, a Multi-Mode Device (MMD) can be connected with available Radio Access Technology (RAT) in a Heterogeneous Wireless Network (HWN). The appropriate RAT selection is essential to achieve expected Quality of Service (QoS) in HWN. There are many factors to select an appropriate RAT in HWN including Data rate, Power consumption, Security, Network delay, Service price, etc. Nowadays, the MMDs are capable to handle with multiple types of services like voice, file downloading, video streaming. Considering numerous factors and multiple types of services, it is a great challenge for MMDs to select the appropriate RAT. A Multi-Attribute Decision Making (MADM) method to deal with numerous attributes to achieve the expected goal is Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). This research utilized TOPSIS method to evaluate its proposed algorithm to choose the proper RAT for single and dual call services. The algorithm applies users' preference of a specific RAT that varies for diverse categories of calls. It also aggregates the assigned call weight and call priority to choose the RAT for group call admission for different scenarios. The highest closeness coefficient has been considered the appropriate networks among other networks. 100 call admission into three networks has been simulated and has been observed. © 2018 Institute of Advanced Engineering and Science.

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Topic: Heterogeneous networks | Wireless networks | Vertical handoff

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- Heterogeneous wireless Networks (HWN)
- Multi-attribute decision making (MADM)
- Radio access technology (RAT)
- TOPSIS method

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